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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,959	11/14/2000	Sang Hee Cho	P-149	6176

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EXAMINER	
FLETCHER, JAMES A	

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/710,959	CHO, SANG HEE	
	Examiner	Art Unit	
	James A. Fletcher	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

New Art Unit

1. Please include the new Art Unit 2616 in the caption or heading of any written or facsimile communication submitted after this Office Action because the examiner, who was assigned to Art Unit 2615, will be assigned to new Art Unit 2616. Your cooperation in this matter will assist in the timely processing of the submission and is appreciated by the Office.

Drawings

2. The drawings are objected to because Fig 4, item ST8 contains the text "DECODONG." The examiner believes the text should read --DECODING--. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Daum (5,596,420).

Regarding claim 10, Daum discloses a method for controlling a display time point of an MPEG bit stream of a recording medium comprising the steps of:

- initializing a counter according to a system clock reference, and judging that the current mode is a normal decoding mode, when a presentation time stamp in inputted (Col 3, lines 25-27 "The SCR was loaded into a counter, referred to as the system counter, and incremented by a 90 kilohertz system clock [SCLK}");
- comparing a system time clock with the presentation time stamp while increasing the system time clock in case that the current mode is a normal decoding mode upon judgment (Col 4, lines 10-16 "A comparator coupled to the subtracter compares the difference value with a predetermined time drift threshold and outputs a video frame skip signal if the difference value exceeds the pre-determined time drift threshold and the difference value is

negative and outputs a video frame repeat signal if the difference value exceeds the predetermined time drift threshold and the difference value is positive. The latency value is adjusted by adding a predetermined value to the latency value stored in the latency value register if a video frame repeat signal is generated by the comparator. The latency value is adjusted by subtracting a predetermined value from the latency value stored in the latency value register if a video frame skip signal is generated by the comparator."),

- storing a presentation time stamp of the currently inputted picture in case that the current mode is a special decoding mode, and updating the stored presentation time stamp with the presentation time stamp of a decoded or a skipped picture, while performing the special decoding command (Col 22, lines 37 "When step control is activated, the clock input to STC counter may be interrupted and thus the output of STC counter may remain the start count received from CPU 820"); and
- replacing the system time cock with the previously stored presentation time stamp to perform a normal decoding, in case that it is switched to a normal decoding mode while the special decoding is being performed (Col 4, lines 10-16 "A comparator coupled to the subtracter compares the difference value with a predetermined time drift threshold and outputs a video frame skip signal if the difference value exceeds the pre-determined time drift threshold and the difference value is negative and outputs a video frame repeat signal if the difference value exceeds the predetermined time drift threshold and the

difference value is positive. The latency value is adjusted by adding a predetermined value to the latency value stored in the latency value register if a video frame repeat signal is generated by the comparator. The latency value is adjusted by subtracting a predetermined value from the latency value stored in the latency value register if a video frame skip signal is generated by the comparator.").

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4, and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daum, in further view of Watkinson.

Regarding claim 1, Daum discloses a method and apparatus for controlling a display time point of an MPEG bit stream of a recording medium comprising:

- an oscillator for generating a system clock frequency (Col 3, lines 26-27 "a 90 kilohertz system clock [SCLK]");
- a counter initialized according to a system clock reference [SCR] for receiving the system clock frequency from the crystal oscillator, counting it and outputting a system time clock [STC] in a normal decoding mode (Col 3, lines 25-27 "The SCR was loaded into a counter, referred to as the system counter, and incremented by a 90 kilohertz system clock [SCLK}");

- a presentation time stamp [PTS] controller for receiving and storing a presentation time stamp of a predetermined picture in a special decoding mode, and outputting the stored presentation time stamp as an initial value of the counter if it returns to a normal mode (Col 22, lines 37 "When step control is activated, the clock input to STC counter may be interrupted and thus the output of STC counter may remain the start count received from CPU 820"); and
- a comparator for receiving the STC from the counter and a PTS of a predetermined picture, comparing them and outputting a display command signal in case that the STC and the PTS of a predetermined picture are identical to each other upon comparison (Col 4, lines 10-16 "A comparator coupled to the subtracter compares the difference value with a predetermined time drift threshold and outputs a video frame skip signal if the difference value exceeds the pre-determined time drift threshold and the difference value is negative and outputs a video frame repeat signal if the difference value exceeds the predetermined time drift threshold and the difference value is positive. The latency value is adjusted by adding a predetermined value to the latency value stored in the latency value register if a video frame repeat signal is generated by the comparator. The latency value is adjusted by subtracting a predetermined value from the latency value stored in the latency value register if a video frame skip signal is generated by the comparator.").

Daum does not specifically disclose his system clock as being based on a crystal oscillator.

Watkinson teaches the use of a crystal oscillator as the system clock in an MPEG decoder (page 227, "The NLL contains a 27MHz VCXO [Voltage Controlled Crystal Oscillator], a variable-frequency oscillator based on a crystal which has a relatively small frequency range").

As taught by Watkinson, crystal oscillators are well known, widely used, and commercially available means of generating accurate, stable, inexpensive reference frequencies for a variety of electronic components, including timepieces, processors, counters, and the like.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Moon et al to specify a crystal oscillator as the generator of the system clock frequency.

Regarding claim 2, Daum discloses an apparatus for controlling a display time point of an MPEG bit stream of a recording medium wherein the special encoding mode includes a pause mode and a fast winding mode (Col 22, lines 1-2 "In order to freeze the video frame in step mode, the output of 90 Khz clock 401 may be suppressed by AND gate 870").

Regarding claim 3, Daum discloses an apparatus for controlling a display time point of an MPEG bit stream of a recording medium wherein the special decoding mode include a slow motion mode in which, after a predetermined picture is decoded, the predetermined picture is repeatedly displayed to thereby slow the decoding operation

(Col 22, lines 21-23 "In operation, step control may be activated through CPU 820, through, for example, a graphical user interface [e.g., 'step', 'pause' or 'jog' icon]" and Col 22, lines 1-2 "In order to freeze the video frame in step mode, the output of 90 Khz clock 401 may be suppressed by AND gate 870" and Col 4, lines 44-48 "The comparator may further output a multiple video frame repeat signal").

Regarding claim 4, Daum discloses an apparatus for controlling a display time point of an MPEG bit stream of a recording medium wherein, in case of the pause mode, the time point at which a user inputs a pause command is a display time point of a screen (Col 22, lines 1-2 "In order to freeze the video frame in step mode, the output of 90 Khz clock 401 may be suppressed by AND gate 870").

Regarding claim 6, Daum suggests outputting a display signal when the STC and PTS are within a preset value of each other (Col 4, lines 40-44 "The comparator may compare the difference value with a predetermined time drift threshold and output a single video frame repeat signal if the difference value exceeds the predetermined time drift threshold by a first predetermined amount and the difference value is positive"), but does not explicitly disclose an apparatus for controlling a display time point of an MPEG bit stream of a recording medium wherein the comparator outputs a display command signal when the system time clock (STC) and the presentation time stamp (PTS) of the predetermined time picture are identical to each other.

The examiner takes official notice that the outputting of a display command when conditions are proper for display is well known and widely used, allowing a player to

either present a currently decoded image, a previously stored image, or mute the output as required by circumstances.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Daum in order to output a command to display the currently decoded image at the appropriate time.

Regarding claim 7, Daum discloses an apparatus for controlling a display time point of an MPEG bit stream of a recording medium wherein, in case that the system time clock and the presentation time stamp (PTS) of the predetermined picture are not identical to each other, the comparator repeatedly performs comparing operation to compare the system time clock (STC) and the presentation time stamp (PTS) of the predetermined picture while increasing the system time clock (STC), until they are identical to each other (Col 10, lines 56-66 "As the STC counter 411 is incremented, the value for M may be being generated. Upon reaching a VPTS, the generation of M for the detected VPTS may be completed and the counter output 405 reflects the computation of (APTS+M). When a VPTS is detected within the encoded/compressed data stream, the register 412 may be loaded with the binary value representing the detected VPTS at register input 403. The subtracter 413 computes (APTS+M)-VPTS from the value of (APTS+M) at subtracter input 405 and the value of VPTS at subtracter input 406.").

Regarding claim 8, Daum discloses an apparatus for controlling a display time point of an MPEG bit stream of a recording medium wherein, in the special decoding mode, the PTS controller stores the PTS of a picture being currently inputted, and then

updates the stored PTS with a PTS of a decoded or a skipped picture while performing the decoding command (Col 12, lines 22-24 "when a VPTS may be detected within the encoded/compressed data stream, the STC counter 411 may be set and loaded with a binary value representing the detected VPTS at counter input 403").

Regarding claim 9, Daum discloses an apparatus and method for controlling a display time point of an MPEG bit stream of a recording medium wherein, upon receipt of the presentation time stamp from the PTS controller, the counter sets the presentation time stamp as an initial value, and receives the system clock frequency from the oscillator, counts it, and outputs the STC (Col 8, lines 63-66 "Upon the occurrence of the APTS 312, the counter 411 adds a number of SCLK clock cycles corresponding to a stored latency value M 313" and Col 10, lines 59-60 "the counter output 405 reflects the computation of [APTS+M]").

Daum discloses a clock frequency of 900 KHz to illustrate the decoding of MPEG 1 data, notes that other decoding methods exist (Col 2, lines 12-14 "When using a compression/encoding method such as MPEG I, MPEG II, or JPEG, the data packets are encoded appropriately"), but does not specifically disclose a clock frequency of 27MHz.

Watkinson teaches that MPEG2 decoding is based on a system clock frequency of 27MHz (page 227, "The NLL contains a 27MHz VCXO [Voltage Controlled Crystal Oscillator], a variable-frequency oscillator based on a crystal which has a relatively small frequency range"), providing the additional image and audio quality that the more advanced encoding and decoding method provides.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Daum in order to have a system clock frequency of 27MHz.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daum and Watkinson as applied to claims 1 and 2 above, and further in view of Lane (5,793,927).

Regarding claim 5, Daum suggests displaying a P or I frame as it is decoded (Col 3, lines 34-36 "In some decoding systems, a video clock or decoding clock may be generated without reference to the SCR and it may not be locked...")

Lane teaches an apparatus for controlling a display time point of an MPEG bit stream of a recording medium wherein, in case of a fast winding, when a 'P' frame or an 'I' frame is detected during analyzing the MPEG bit stream, a time point at which decoding of the 'P' frame or the 'I' frame is ended becomes the display time point (Col 6, lines 13-18 "To prevent decoder buffer underflow, the bitstream corrector circuit 220...stores the trick play frame data until it has the data corresponding to a full frame. The bitstream corrector circuit 220 then outputs this data to the decoder several times").

As suggested by Daum and taught by Lane, in a fast-forward trick play mode, buffer underflow is a concern and is readily corrected by outputting the frame data as soon as it is decoded.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Daum to display frames in fast-forward trick play mode as soon as they are available.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daum.

Regarding claim 11, Daum suggests outputting a display signal when the STC and PTS are within a preset value of each other (Col 4, lines 40-44 "The comparator may compare the difference value with a predetermined time drift threshold and output a single video frame repeat signal if the difference value exceeds the predetermined time drift threshold by a first predetermined amount and the difference value is positive"), but does not explicitly disclose an apparatus for controlling a display time point of an MPEG bit stream of a recording medium wherein the comparator outputs a display command signal when the system time clock (STC) and the presentation time stamp (PTS) of the predetermined time picture are identical to each other.

The examiner takes official notice that the outputting of a display command when conditions are proper for display is well known and widely used, allowing a player to either present a currently decoded image, a previously stored image, or mute the output as required by circumstances.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Daum in order to output a command to display the currently decoded image at the appropriate time.

9. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daum as applied to claim 10 above, and further in view of Watkinson.

Regarding claim 12, Daum discloses an apparatus and method for controlling a display time point of an MPEG bit stream of a recording medium wherein, upon receipt of the presentation time stamp from the PTS controller, the counter sets the

presentation time stamp as an initial value, and receives the system clock frequency from the oscillator, counts it, and outputs the STC (Col 8, lines 63-66 "Upon the occurrence of the APTS 312, the counter 411 adds a number of SCLK clock cycles corresponding to a stored latency value M 313" and Col 10, lines 59-60 "the counter output 405 reflects the computation of [APTS+M]").

Daum discloses a clock frequency of 900 KHz to illustrate the decoding of MPEG 1 data, notes that other decoding methods exist (Col 2, lines 12-14 "When using a compression/encoding method such as MPEG I, MPEG II, or JPEG, the data packets are encoded appropriately"), but does not specifically disclose a clock frequency of 27MHz.

The examiner takes official notice that MPEG2 decoding is based on a system clock frequency of 27MHz, providing the additional image and audio quality that the more advanced encoding and decoding method provides.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Daum in order to have a system clock frequency of 27MHz.

Regarding claim 13, Daum discloses a method for controlling a display time point of an MPEG bit stream of a recording medium wherein, in the normal decoding operation, the stored PTS is updated with a PTS of a decoded or a skipped picture (Col 10, lines 56-63 "As the STC counter 411 is incremented, the value for M may be being generated. Upon reaching a VPTS, the generation of M for the detected VPTS may be completed and the counter output 405 reflects the computation of (APTS+M). When a

VPTS is detected within the encoded/compressed data stream, the register 412 may be loaded with the binary value representing the detected VPTS at register input 403).

Regarding claim 14, Daum discloses that frames may be presented without a PTS (Col 3, lines 19-21 "The MPEG standard may require that a APTS, VPTS, and SCR show up in the bitstream at least once every seven tenths [0/7] of a second"), but do not specifically disclose generation of PTSs from PTS data of nearby images.

Watkinson teaches a method for controlling a display time point of an MPEG bit stream of a recording medium wherein, the step of the normal decoding operation comprising a step of obtaining a PTS by adding the number of frames which performed the special decoding to the PTS of the previous picture, in case that the currently inputted picture does not have a PTS (Page 224 "In practice the time between input pictures is constant and so there is a certain amount of redundancy in the time stamps. Consequently, PTS/DTS need not appear in every PES packet. Time stamps can be up to 700 milliseconds apart in program streams and up to 100 milliseconds apart in transport streams. As each picture type (I, P, or B) is flagged in the bitstream, the decoder can infer the PTS/DTS for every picture from the ones actually transmitted").

As suggested by Daum and taught by Watkinson, deriving a PTS for an image that does not have one is well-known, and provides the advantage of reducing the total amount of data stored or transmitted to the decoder.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Daum to include derivation of PTS for frames that do not have them.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Fletcher whose telephone number is (571) 272-7377. The examiner can normally be reached on 7:45AM - 5:45PM M-Th, first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Faile can be reached at (571) 272-7375.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only).

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

JAF
March 6, 2005

ROBERT CHEVALIER
PRIMARY EXAMINER